SFAR
Société Française d'Anesthésie et de Réanimation

Blocs de paroi abdominale: TAP bloc ou bloc du carré des lombes

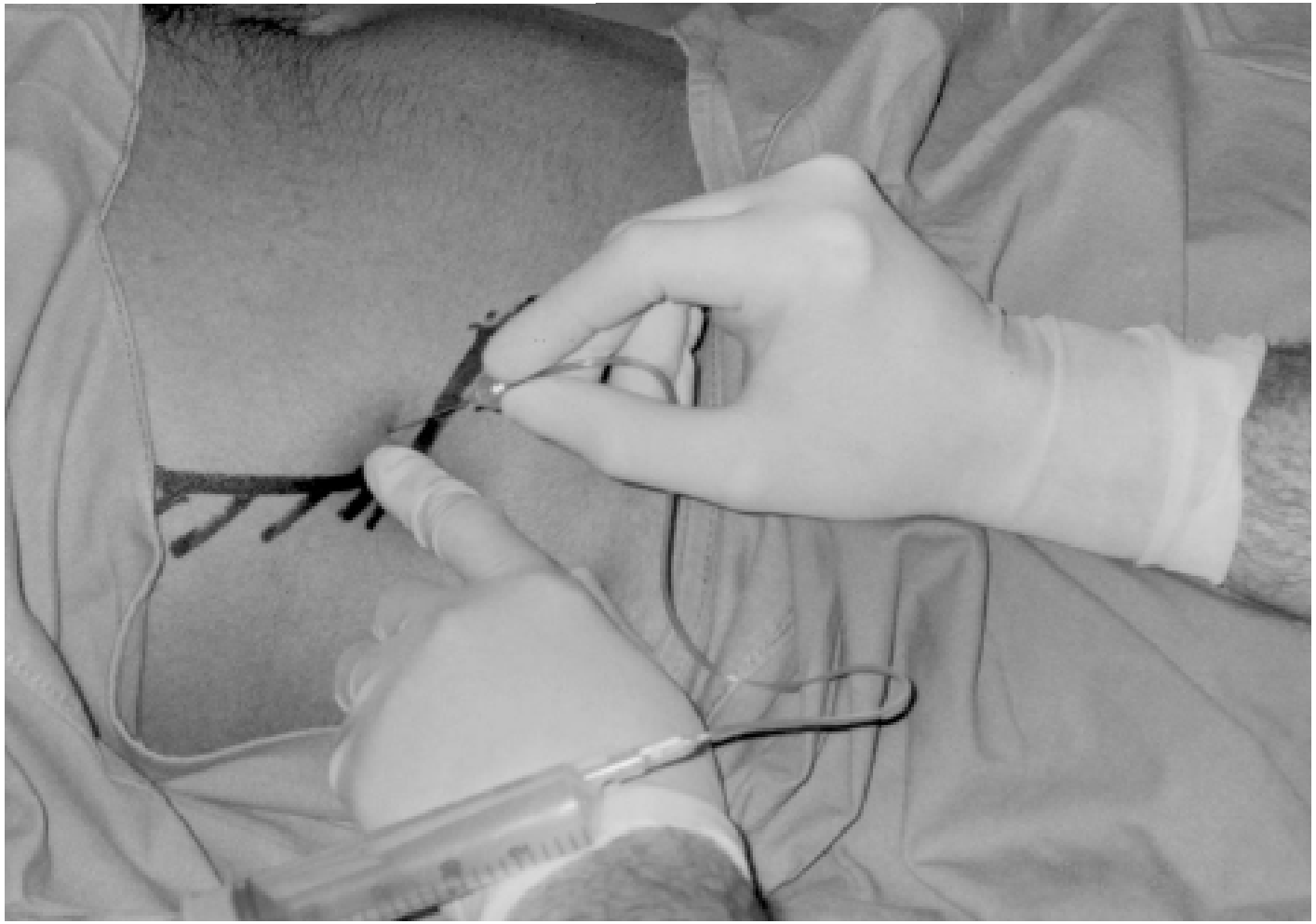
Christophe Aveline
Hôpital Privé Sévigné
35517 Cesson Sévigné

SFAR LE CONGRÈS
Société Française d'Anesthésie et de Réanimation

DÉCLARATION DE LIEN D'INTÉRÊT

Je n'ai aucun lien d'intérêts en rapports avec cette présentation

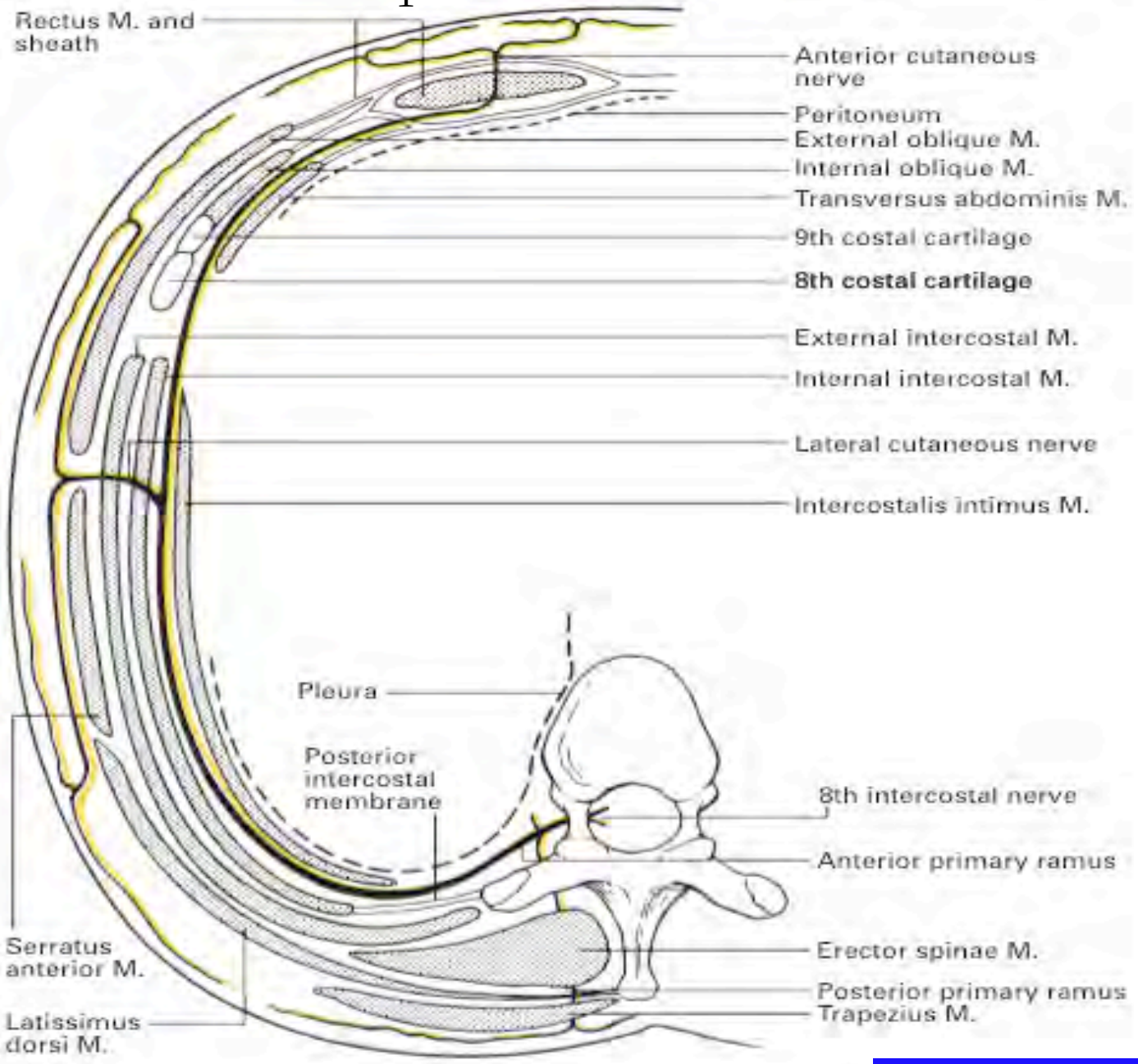
Abdominal field block: a new approach via the lumbar triangle



Rafi, Anaesthesia 2001

1

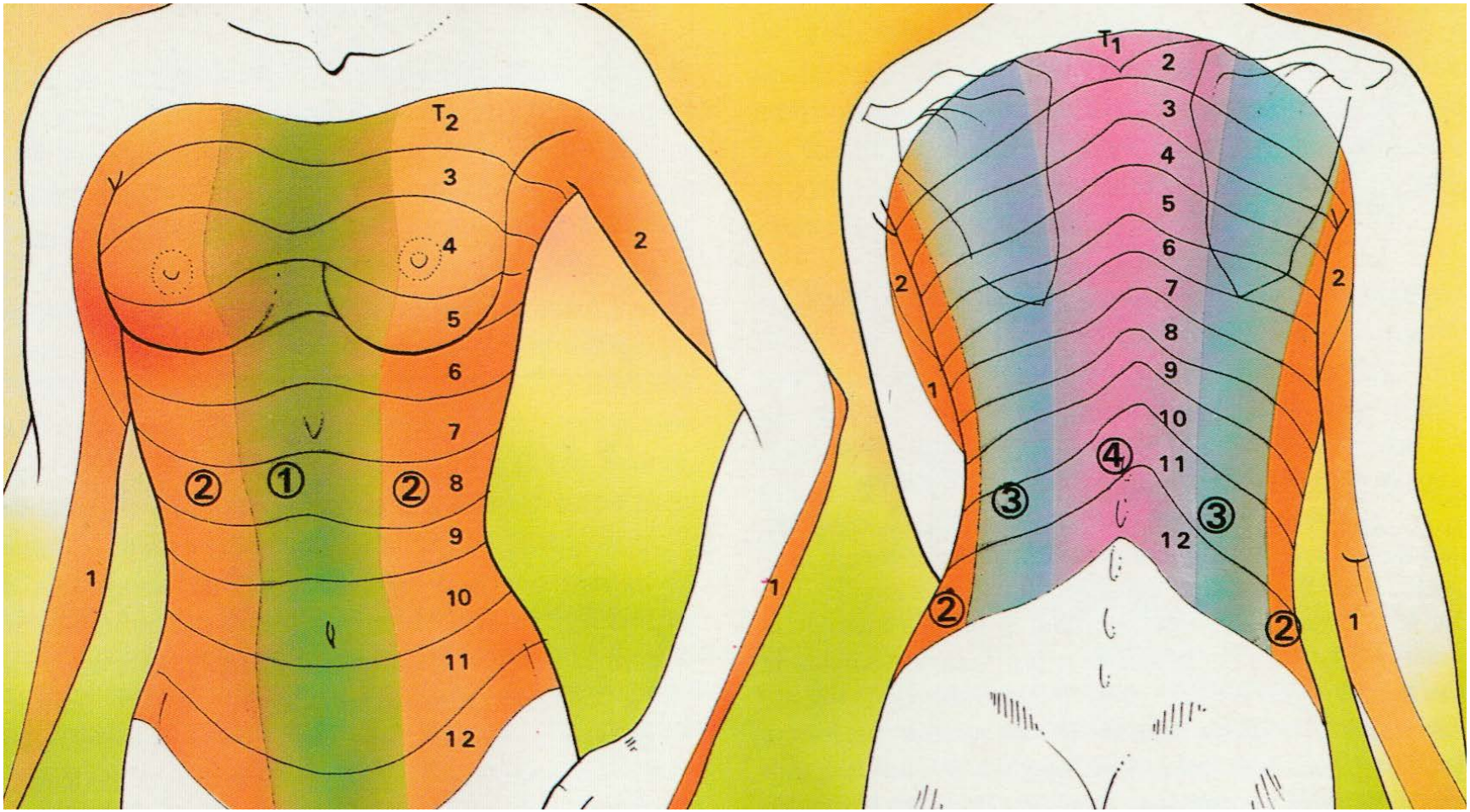
2



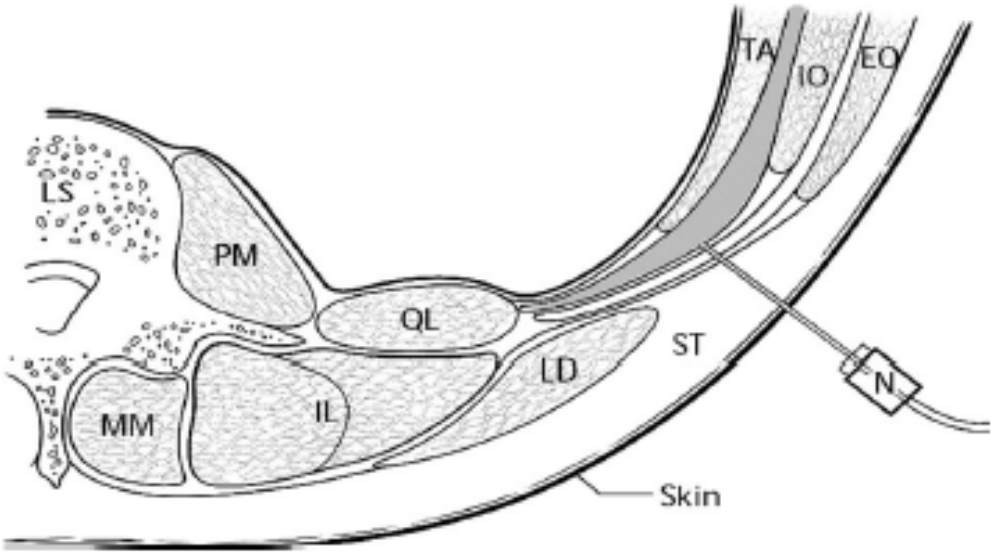
3

4

Nerfs intercostaux (T1-T6), intercostobrachial (T7-T11) et sous-costal (T12)

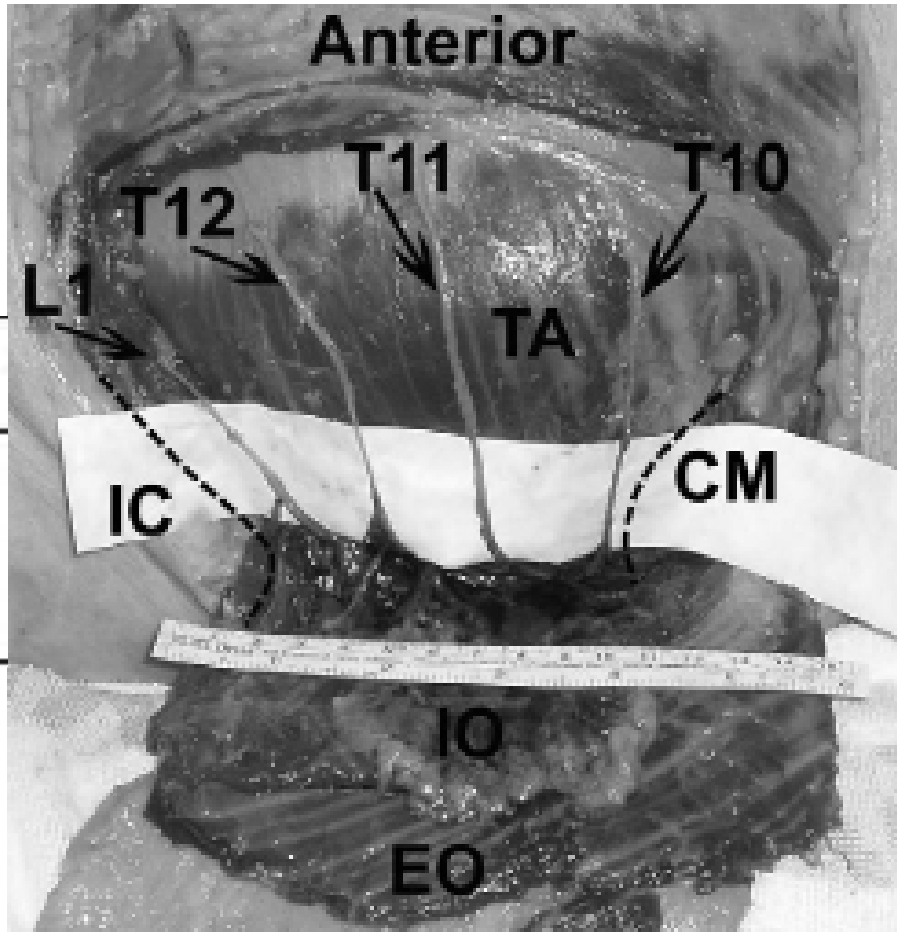


The Transversus Abdominis Plane Block Provides Effective Postoperative Analgesia in Patients Undergoing Total Abdominal Hysterectomy



McDonnell JG et al, Anesth Analg 2008

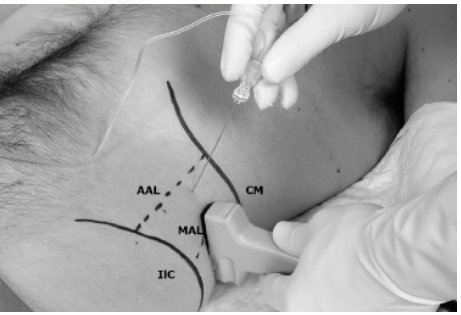
	Number of nerves identified by dissection	Number of nerves involved by dye (*n*)	Frequency of nerves involved by dye (%)
T9	9	0	0
T10	16	8	50
T11	16	16	100
T12	15	15	100
L1	14	13	93

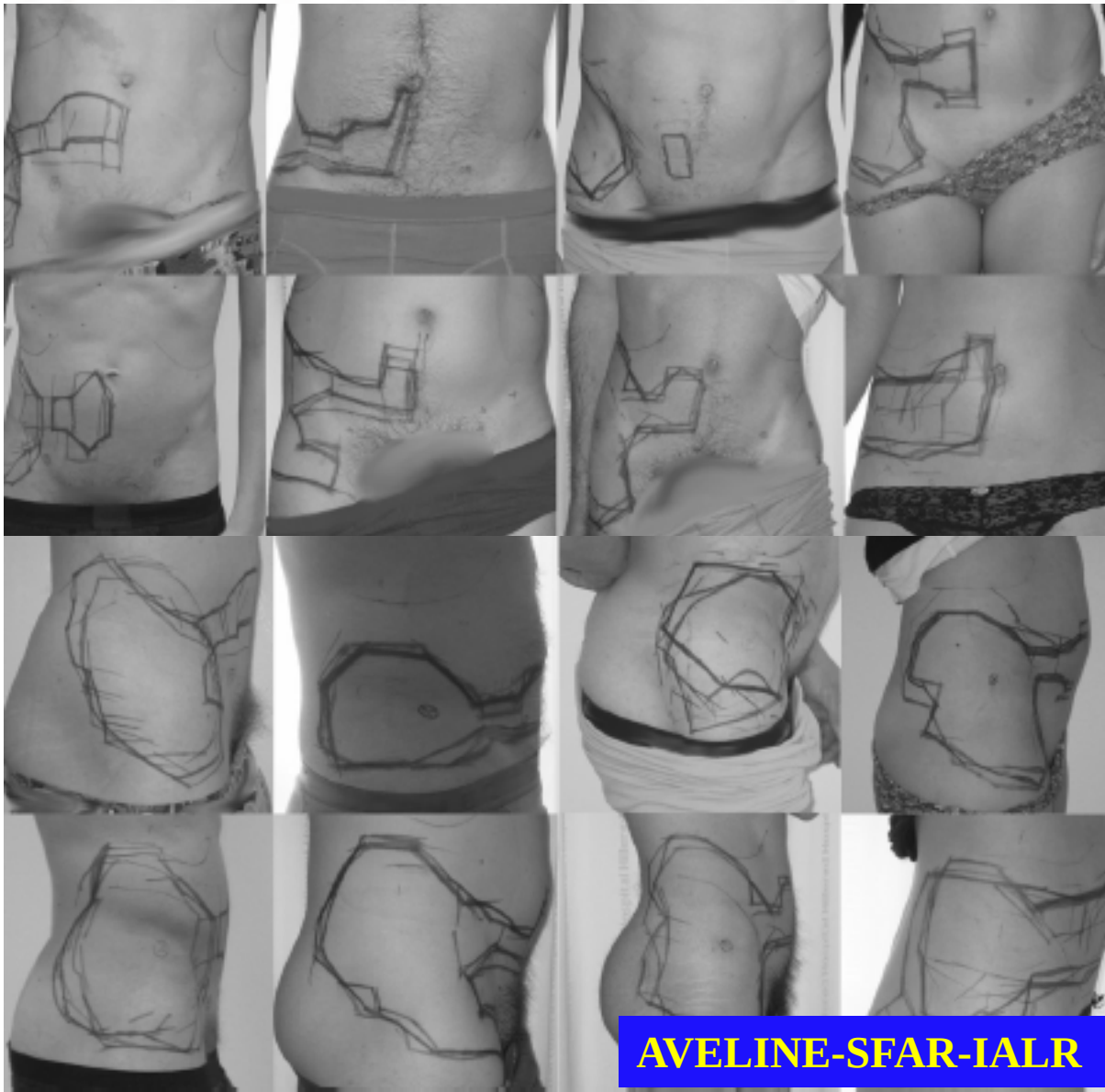


Tran TMN et al, BJA 2009

Cutaneous Sensory Block Area, Muscle-Relaxing Effect, and Block Duration of the Transversus Abdominis Plane Block

A Randomized, Blinded, and Placebo-Controlled Study in Healthy Volunteers





Ropivacaïne 7,5mg/ml: 20ml
Placébo controlatéral
Etendue du bloc sensitif à 90min
Durée: 570min (IQR 512 – 716)

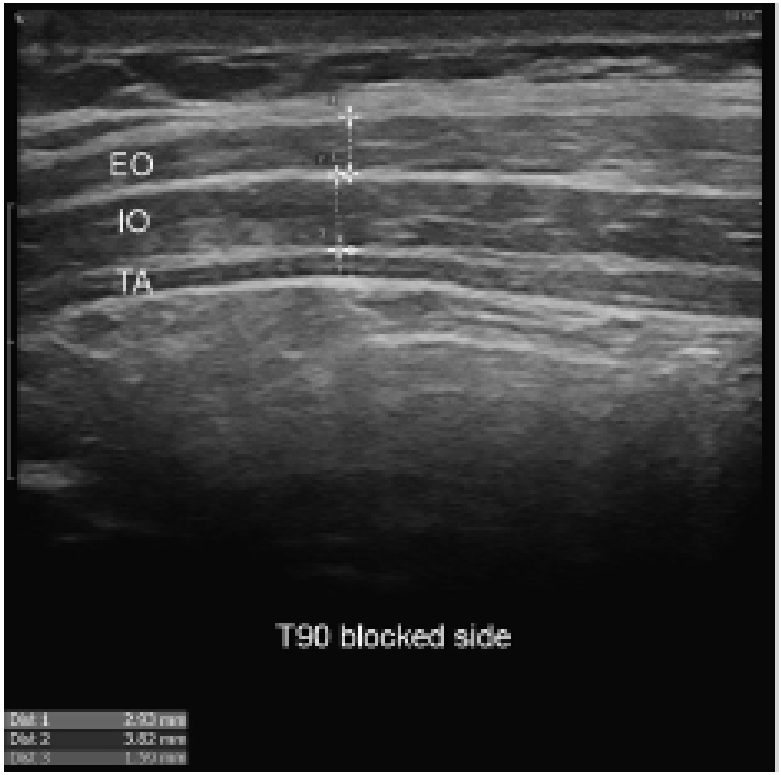
Stoving K et al, RAPM 2015

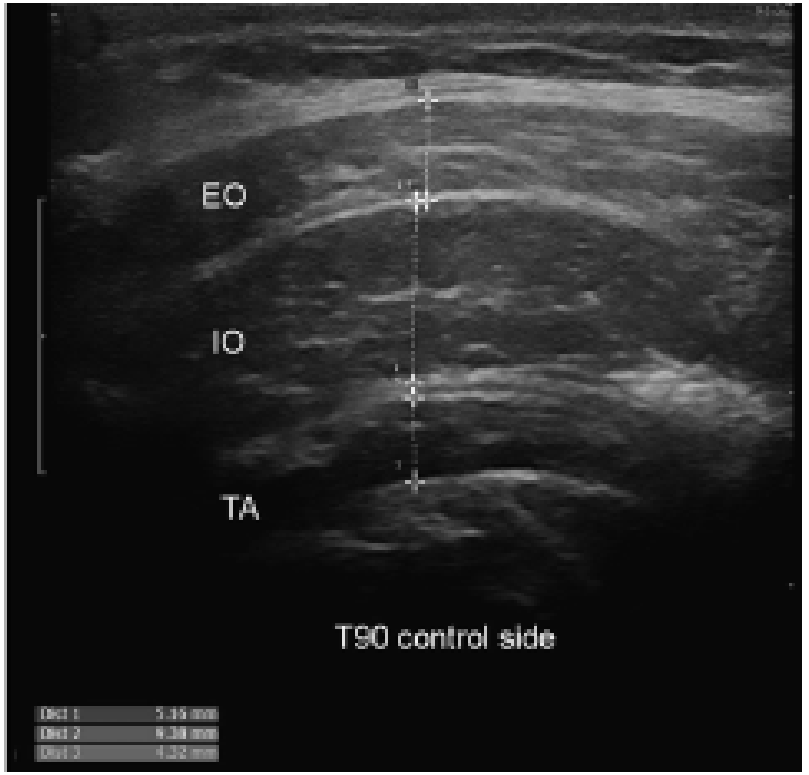
AVELINE-SFAR-IALR

Cutaneous Sensory Block Area, Muscle-Relaxing Effect, and Block Duration of the Transversus Abdominis Plane Block

A Randomized, Blinded, and Placebo-Controlled Study in Healthy Volunteers

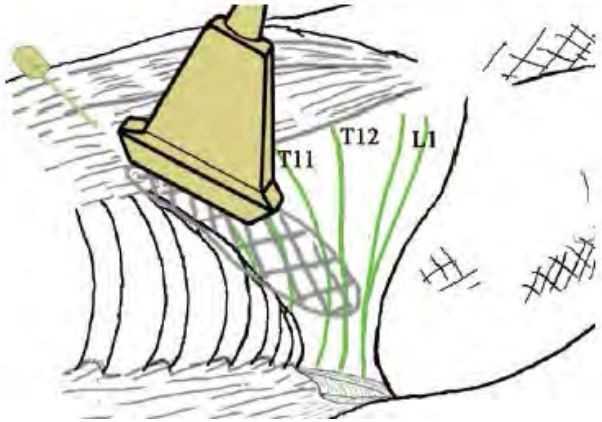
Bloc moteur: 609min (IQR: 502 – 724)





Stoving K et al, RAPM 2015

Spread of injectate after ultrasound-guided subcostal transversus abdominis plane block: a cadaveric study



	Single-injection technique (%)	Multiple-injection technique (%)
T6	0 (0)	0 (0)
T7	0 (0)	3 (43)
T8	0 (0)	4 (57)
T9	3 (43)	6 (86)
T10	7 (100)	7 (100)
T11	7 (100)	7 (100)
T12	3 (43)	1 (14)
L1	0 (0)	0 (0)

Cadaver	Single-injection technique*	Multiple-injection technique
1	2	4
2	3	2
3	3	5
4	4	4
5	2	5
6	3	5
7	3	3

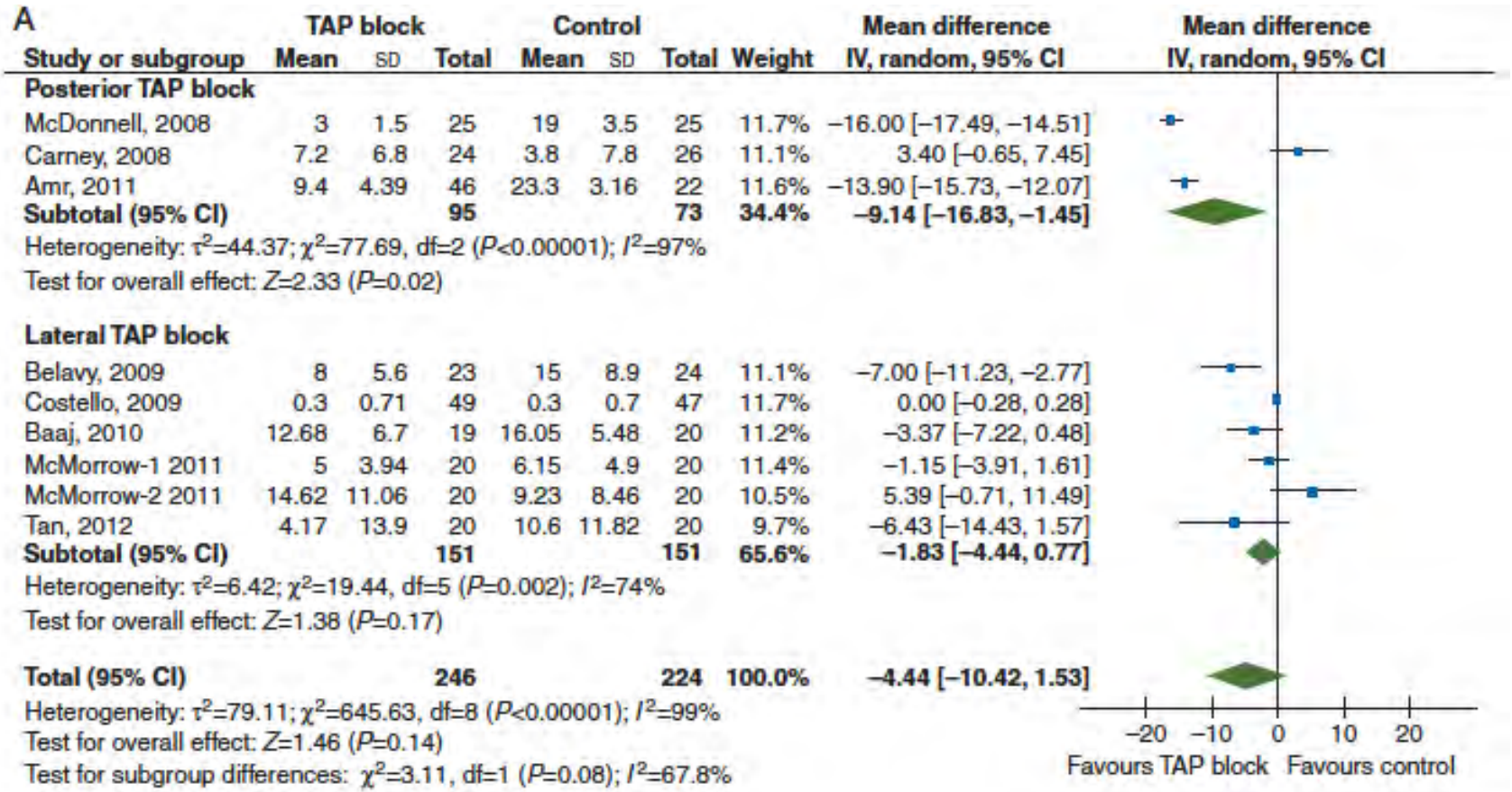
Barrington et al, Anaesthesia 2009

« TAP » et médecine factuelle

- 16 méta-analyses et revue systématique
- Hétérogénéité +++
- Efficacité scores de douleur et consommation en opiacé
- Effet gommé par morphine intrathécale
- Grade A pour application sous échographie (*ASRA 2016*)

Duration of analgesic effectiveness after the posterior and lateral transversus abdominis plane block techniques for transverse lower abdominal incisions: a meta-analysis

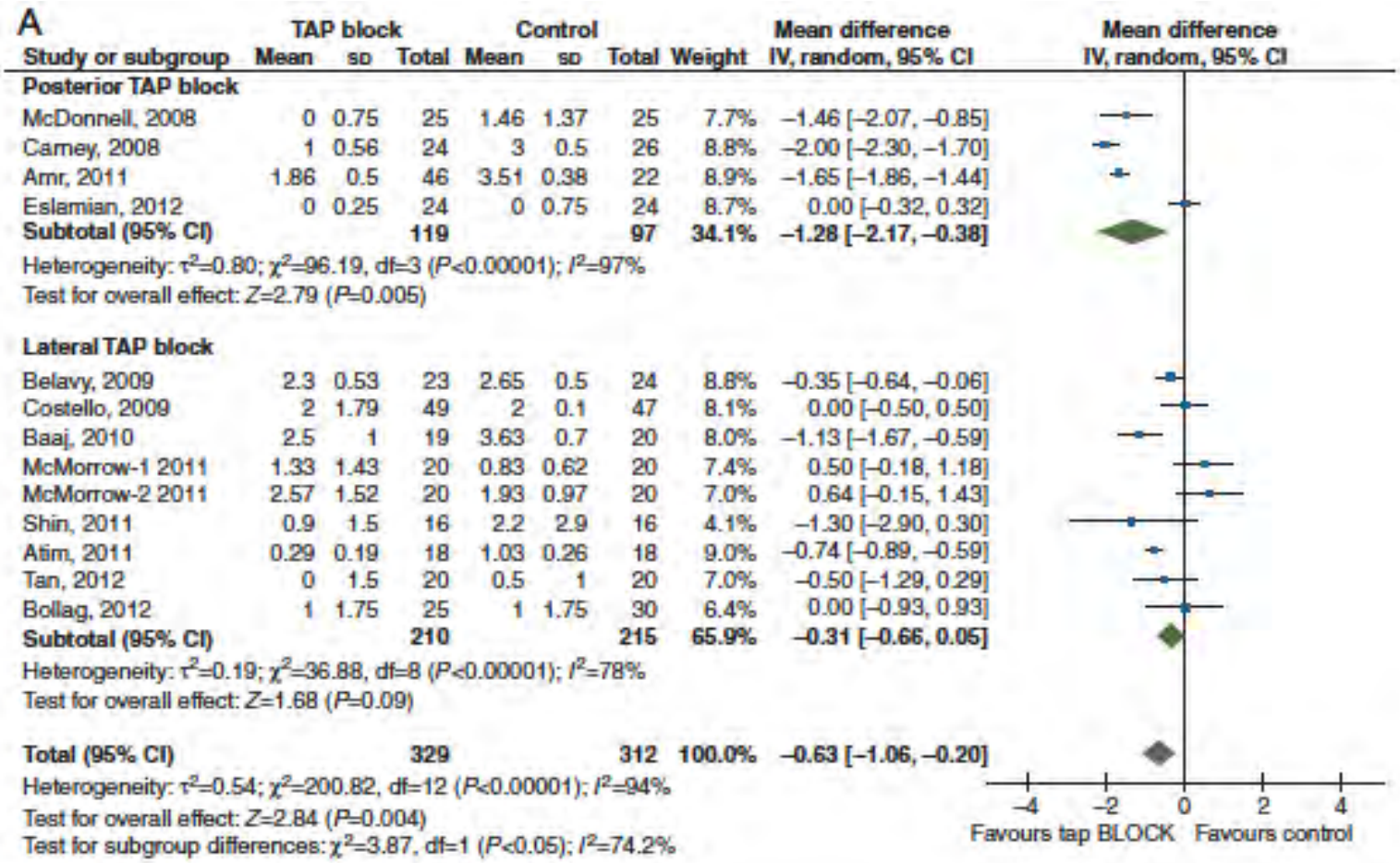
Opiacé H24



Abdallah et al, BJA 2013

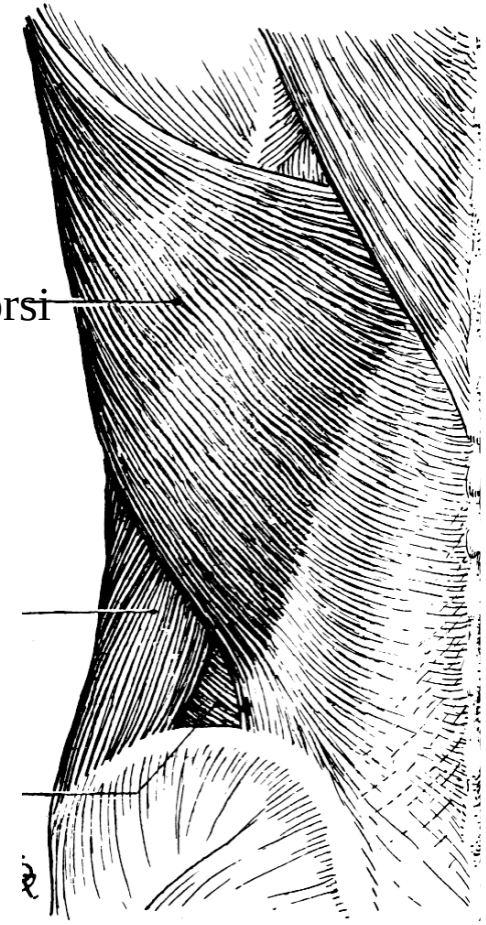
Duration of analgesic effectiveness after the posterior and lateral transversus abdominis plane block techniques for transverse lower abdominal incisions: a meta-analysis

EVA H24



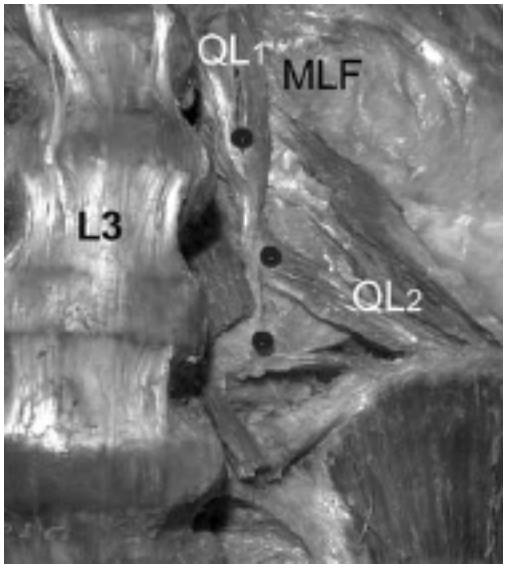
Abdallah et al, BJA 2013

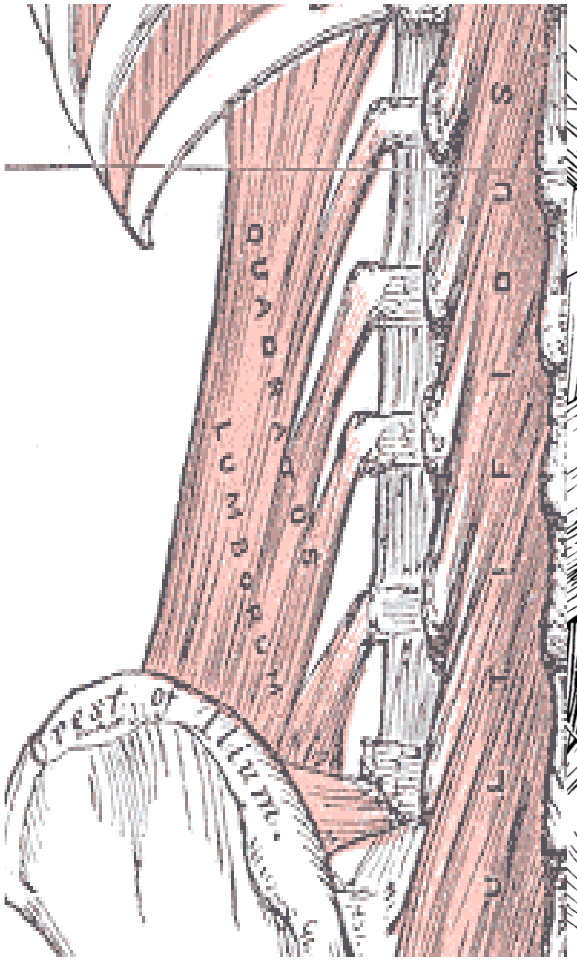
Paroi postérieure



Rouvière, 4ème Ed

Paroi postérieure





Trapèze

L dorsi

Erector spinae

Serratus postéro-inf

Limite latéral du QL

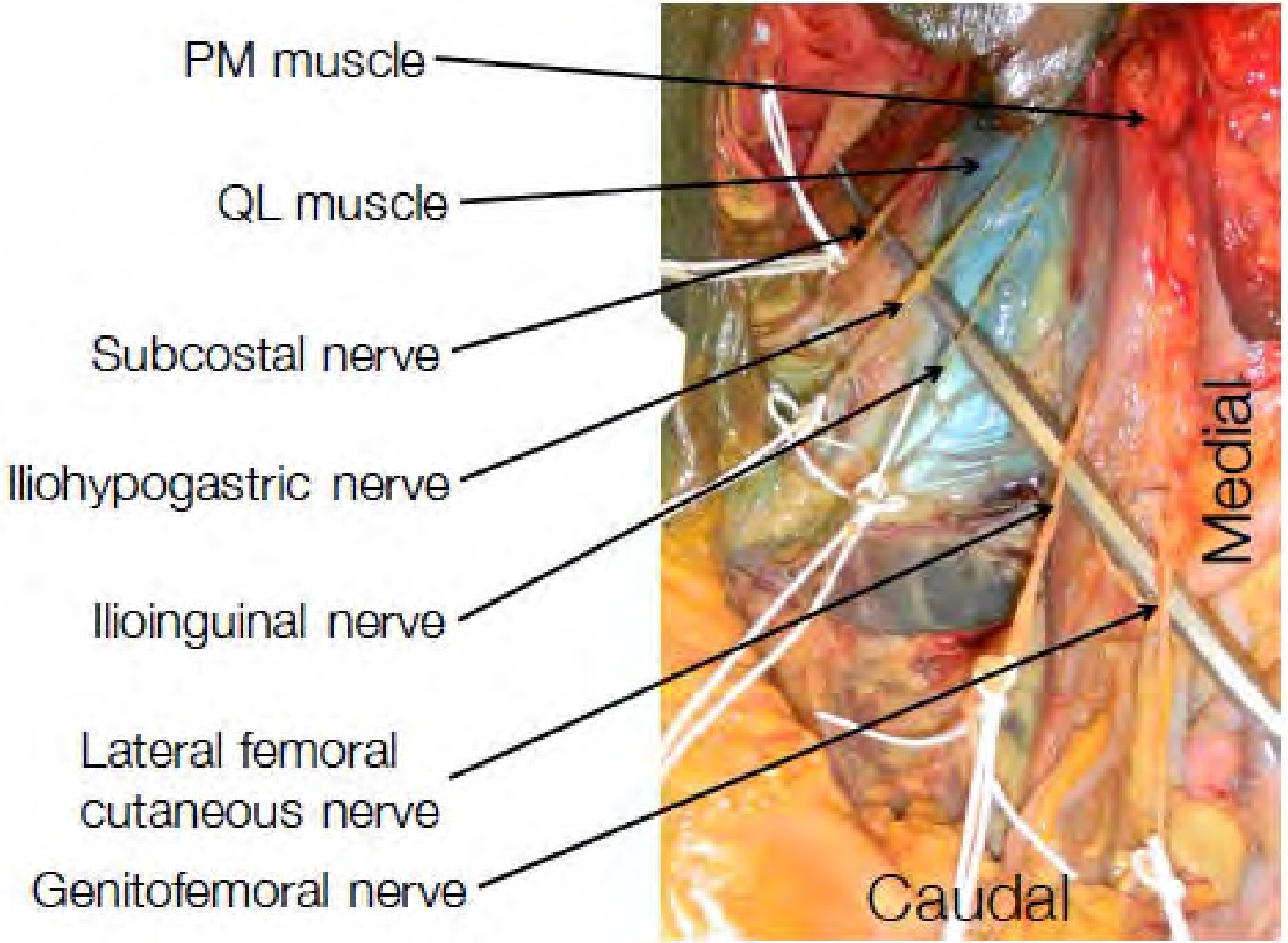
Triangle de Grynfelt

Oblique externe

Oblique interne

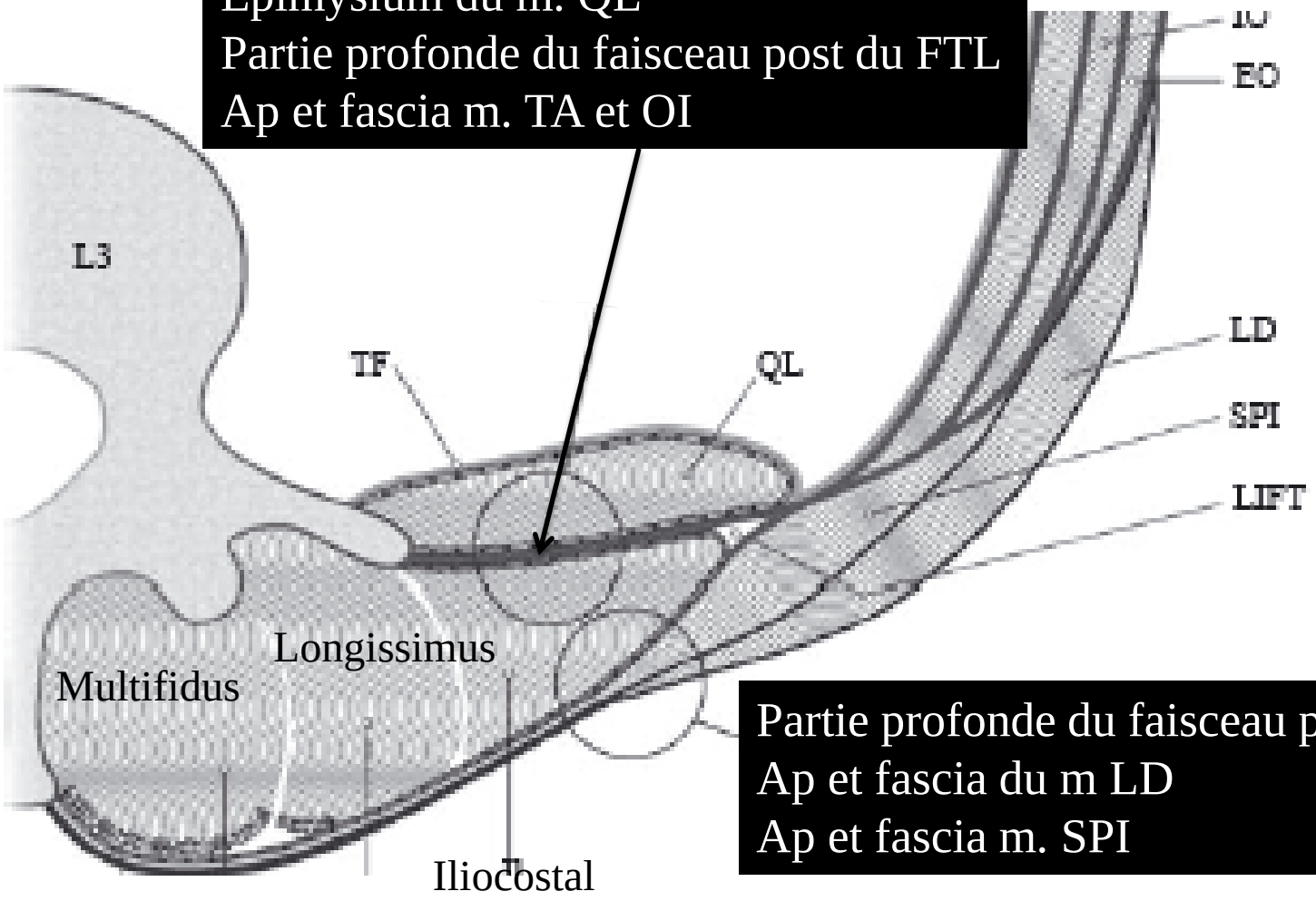
Erector spinae

Rouvière, 4ème Ed – Henri Gray, Anatomy of the human body – Bake

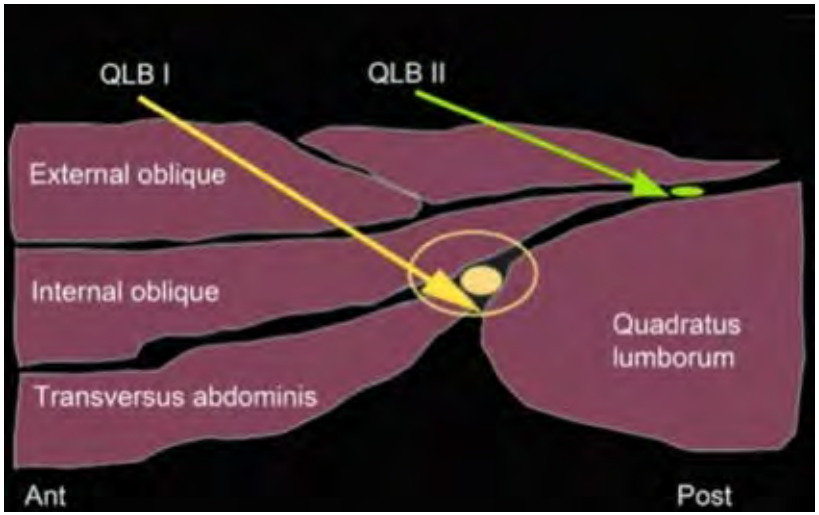


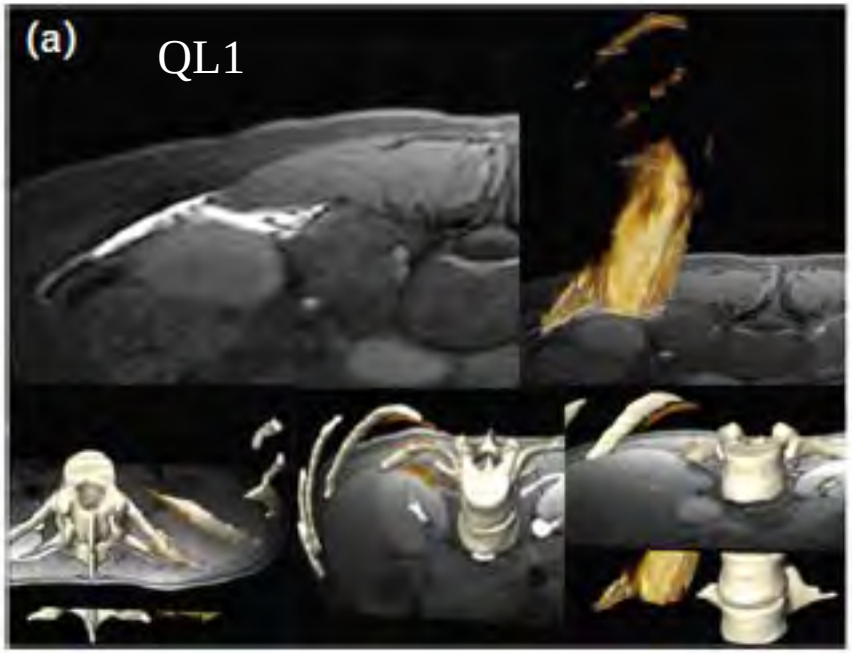
El-Boghdadly et al, ASRA 2016

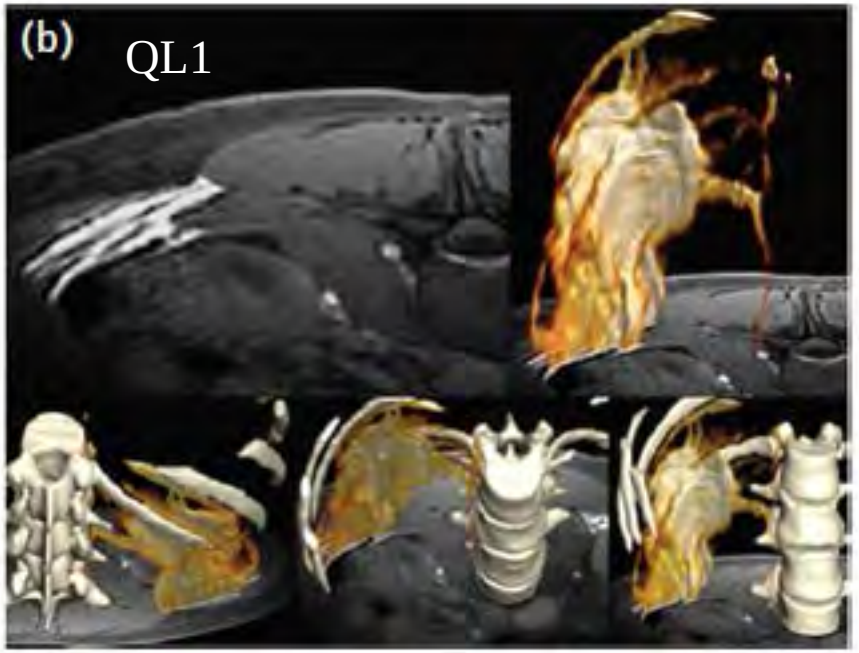
Triangle lombaire interfascial (LIFT)



Schuenke et al, J Anat 2012; 221: 568-76

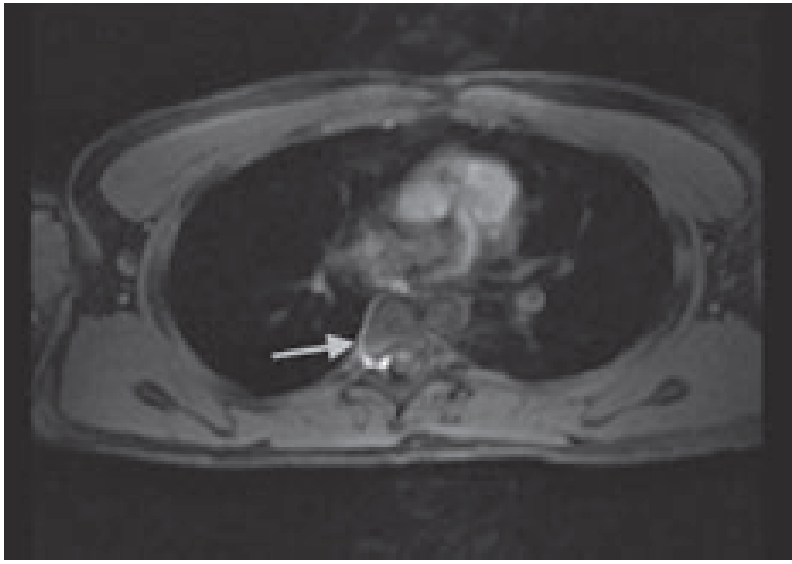




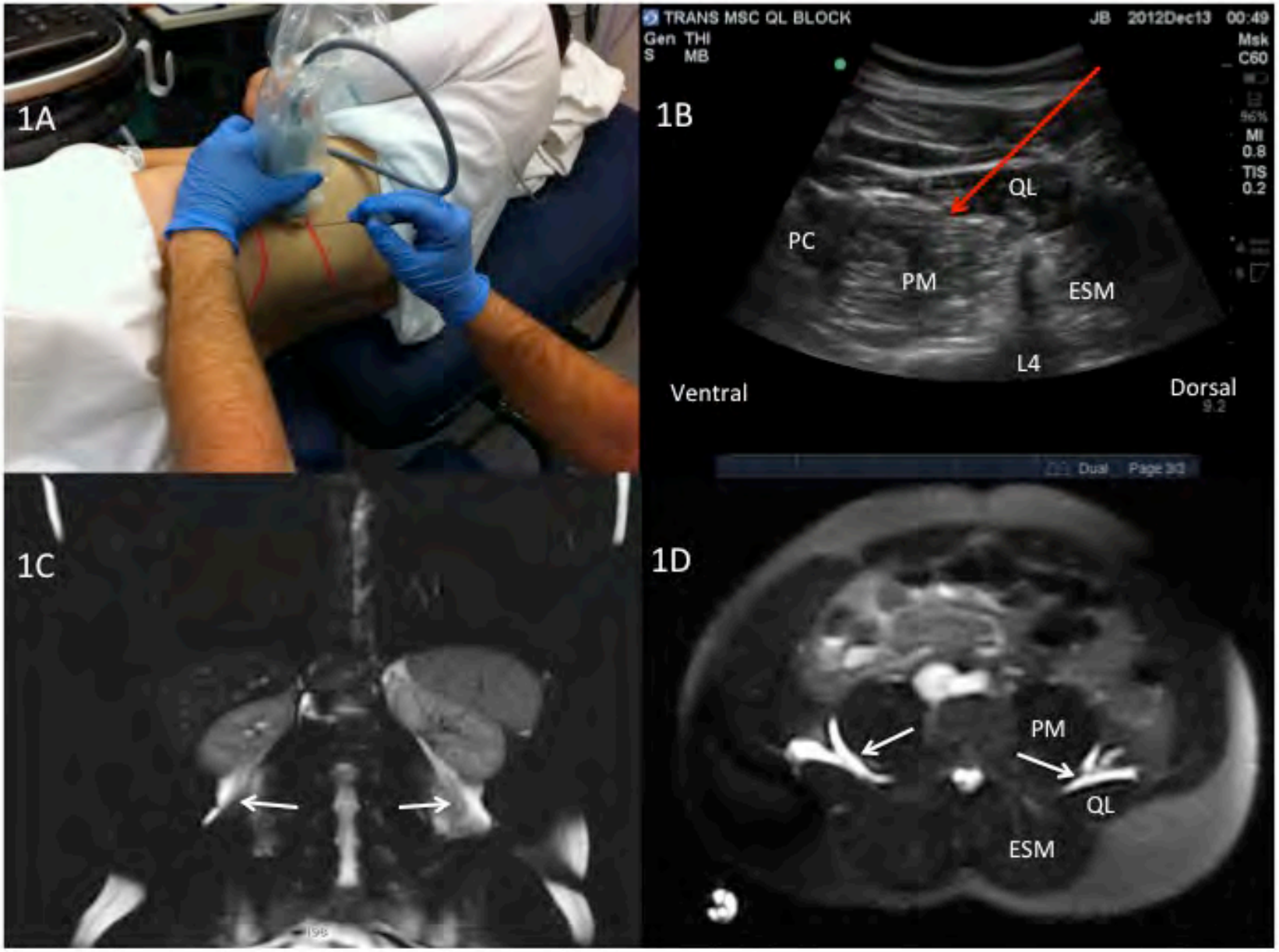


Blanco R, Anaesthesia 2014

Studies on the spread of local anaesthetic solution in transversus abdominis plane blocks*

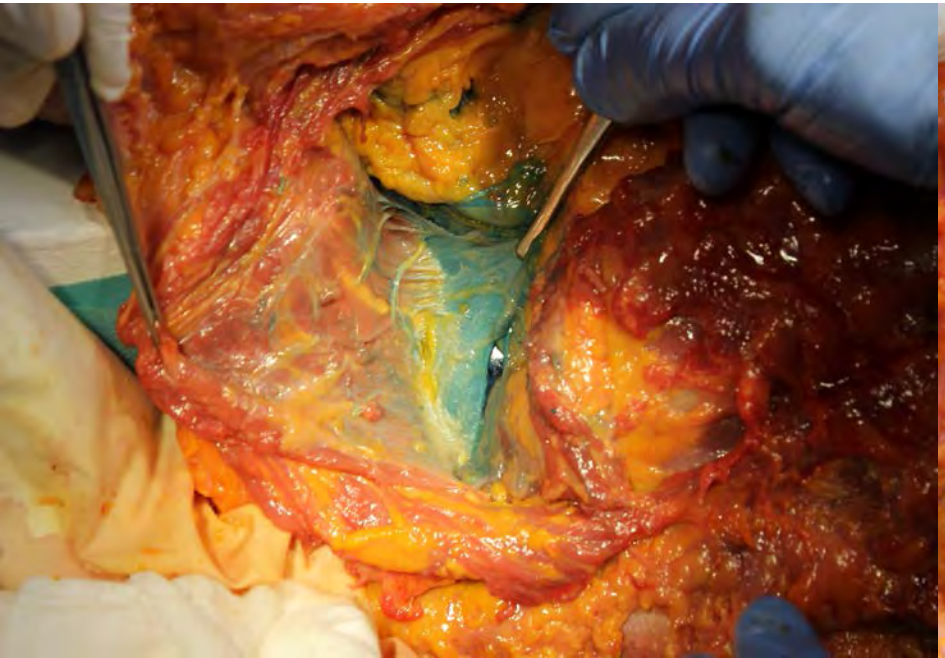


Carney et al, Anesthesia 2011

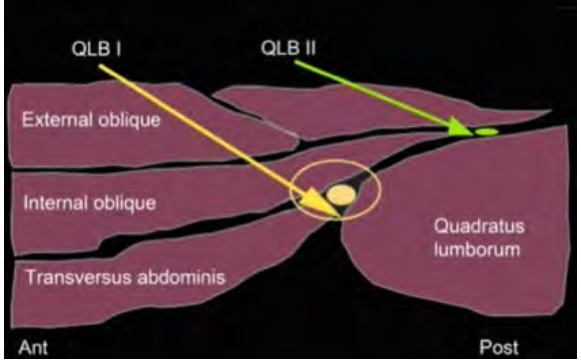


Borglum et al, BJA 2013

AVELINE-SFAR-IALR



AVELINE-SFAR-IALR



F. Transversalis

« Lat QL1 »

m. OE

« Post QL2 »

m. OI

m. TA

Ap m OI et TA

« Ant QL3 »

m. LD

m. SPI

m. QL

Feuillet Ant FTL

Feuillet Moyen FTL

m. ES

AVELINE-SFAR-IALR

A cadaver study comparing spread of dye and nerve involvement after three different quadratus lumborum blocks

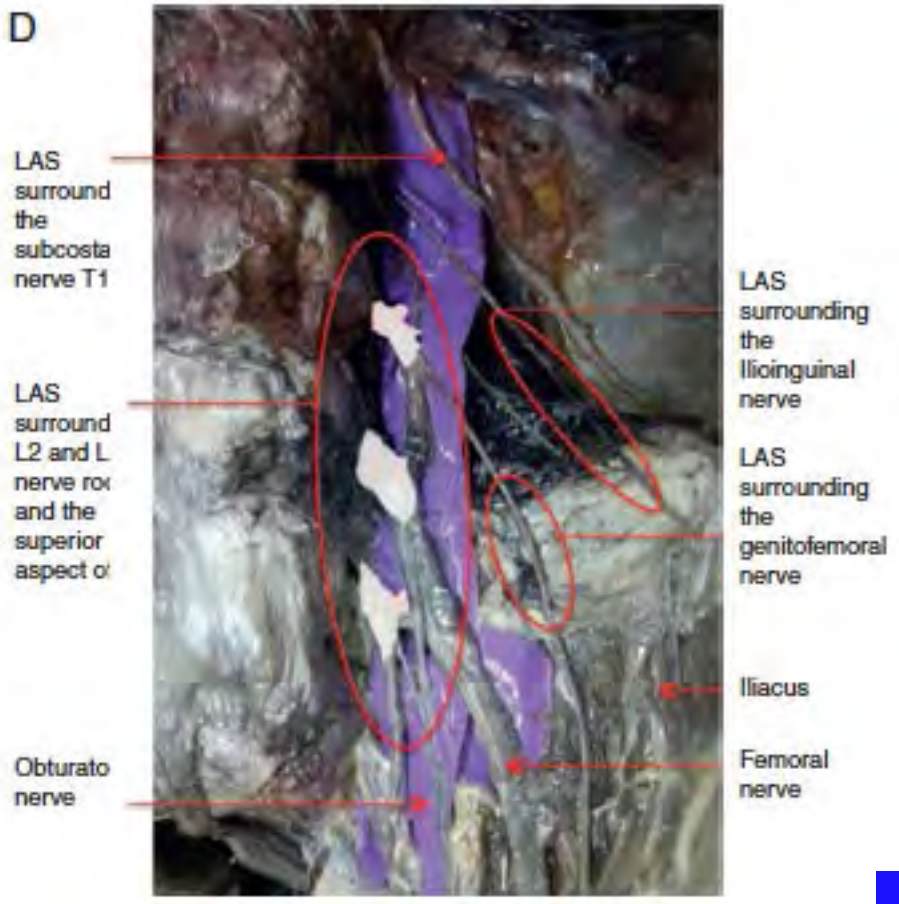
N=10

- QL1: 2/3 extension TAP (NIH – NII – sous costal)
- QL2: 2/3 extension TAP (sous costal)
- QL3: Extension L1-L3 (4/4) et sous-costal + GF + NO (1/4)
- Pas d'extension paravertébrale > T12

Carlile et al BJA 2016

A cadaver study comparing spread of dye and nerve involvement after three different quadratus lumborum blocks

Extension vers le plexus lombal lors du QL3



Carlile et al BJA 2016

A cadaver study comparing spread of dye and nerve involvement after three different quadratus lumborum blocks

TMQL	3A	Needle pierced the postero-medial aspect of quadratus lumborum and psoas major Most dye dispersed within psoas major from its postero-medial aspect to its postero-lateral surface. Some dye dispersed medially towards the medial aspect of psoas major and to the lumbar vertebrae
TMQL	3B	Needle pierced latissimus dorsi, intrinsic muscles of the back, postero-medial aspect of quadratus lumborum and psoas major. Small amount of dye observed on the postero-medial aspect quadratus lumborum around the postero-medial fibres of psoas major. Majority of dye dispersed cranially and caudally within latissimus dorsi and the intrinsic muscles of the back and medially towards the lumbar vertebral bodies and transverse processes
TMQL	3C	Needle pierced latissimus dorsi and the intrinsic muscles of the back, the postero-medial aspect of quadratus lumborum and psoas major. Small amount of dye observed within the postero-medial fibres of psoas major from its cranial attachment at L1 vertebral disc and transverse process to below the iliac crest caudally. Most dye observed within the body of quadratus lumborum, from its cranial to caudal attachments but located mainly within its antero-medial aspect to surround the transverse processes of L1 to L4.
TMQL	3D	Pierced latissimus dorsi and the intrinsic muscles of the back, the postero-medial aspect of both quadratus lumborum and psoas major. LAS observed within psoas major surrounding its postero-lateral surface through to its antero-lateral aspect. The majority of the LAS had dispersed within the body of quadratus lumborum.

Carlile et al BJA 2016

A cadaveric study of injectate spread associated with the transmuscular quadratus lumborum block

K El-Boghdadly*, S D Adhikary †, Z Nasralah ‡, N Sarawani †, A M Nixon ‡, K J Chin*
*Toronto Western Hospital, †Penn State Hershey Medical Centre, ‡Penn State College of Medicine

Structure	Specimens demonstrating dye staining
Subcostal nerve	5 (50%)
Iliohypogastric nerve	8 (80%)
Ilioinguinal nerve	10 (100%)
Genitofemoral nerve	2 (20%)
Lateral femoral cutaneous nerve	3 (30%)
TAP	0 (0%)
TF plane	2 (20%)
QL muscle	10 (100%)
PM muscle	7 (70%)

El-Boghdadly et al, ASRA 2016

A cadaveric study of injectate spread associated with the transmuscular quadratus lumborum block

K El-Boghdadly*, S D Adhikary †, Z Nasralah ‡, N Sarawani †, A M Nixon ‡, K J Chin*
*Toronto Western Hospital, †Penn State Hershey Medical Centre, ‡Penn State College of Medicine

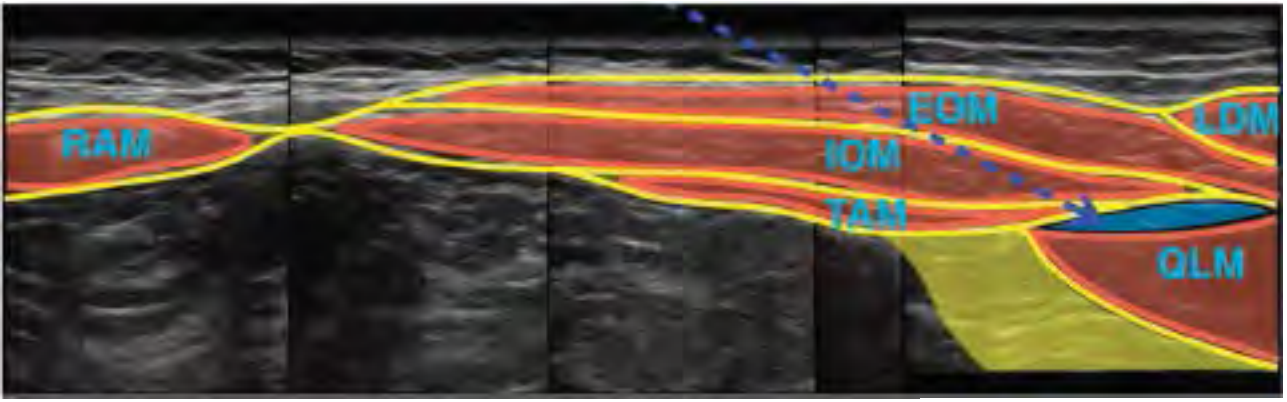
Extension paravertébrale (63%)
Extension médiale PM et latérale QL (100%)
Extension avec PT de L4 (100%)
Niveau céphalique max T12

El-Boghdadly et al, ASRA 2016

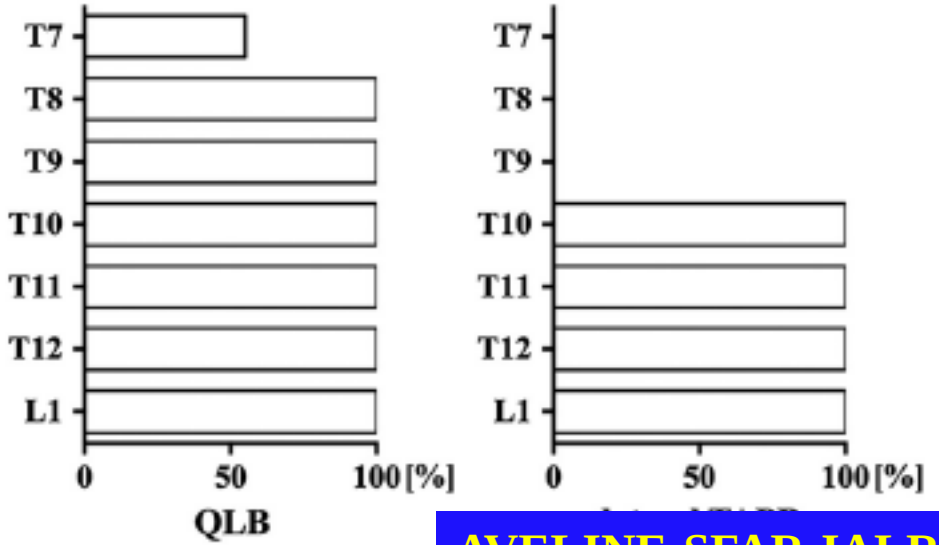
Quadratus Lumborum Block

Analgesic Effects and Chronological Ropivacaine Concentrations After Laparoscopic Surgery

Takeshi Murouchi, MD, Soshi Iwasaki, MD, PhD, and Michiaki Yamakage, MD, PhD



Etude comparative avec cohorte historique issue d'une autre étude

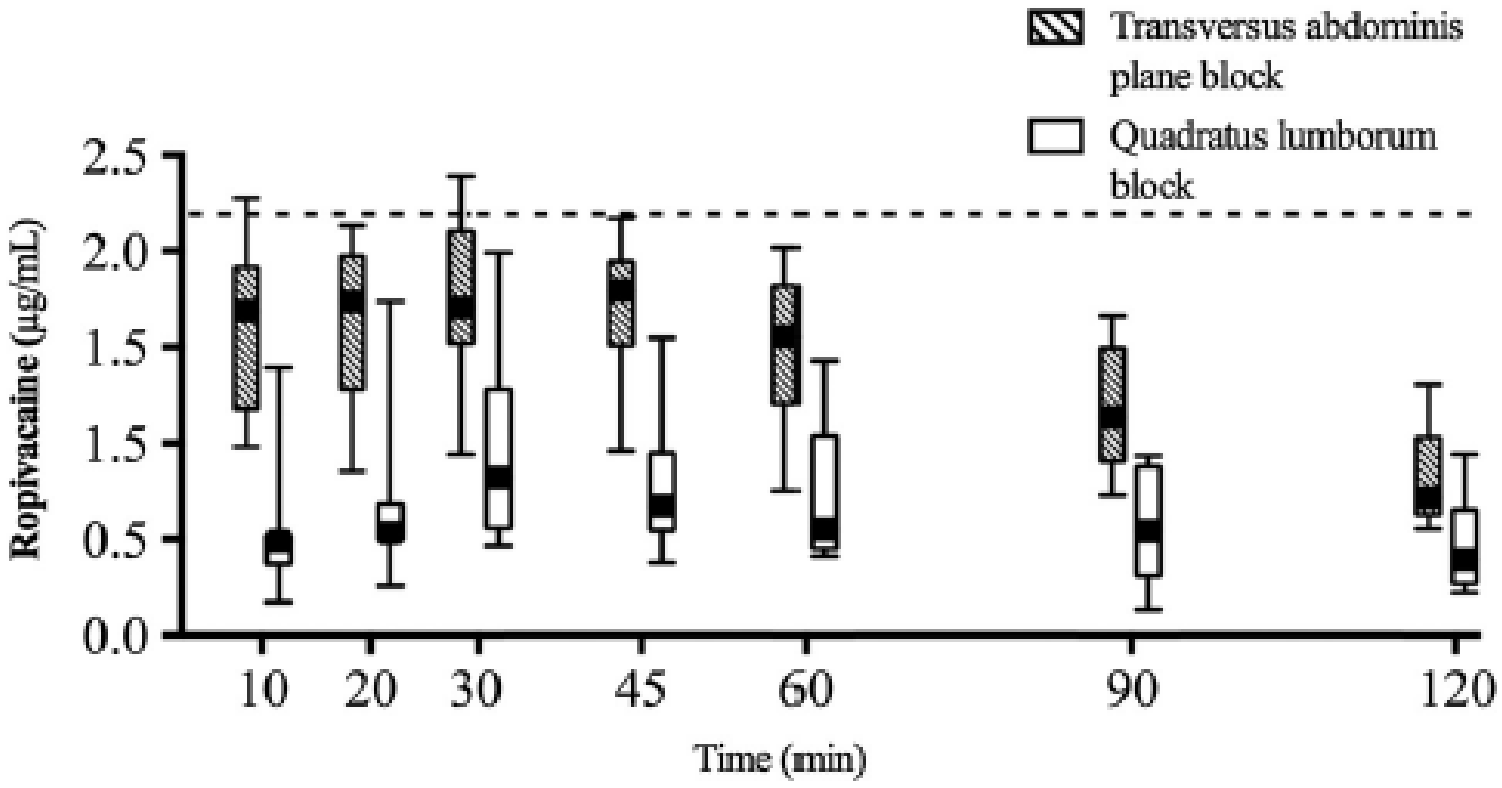


Murouchi et al, RAPM 2016

Quadratus Lumborum Block

Analgesic Effects and Chronological Ropivacaine Concentrations After Laparoscopic Surgery

Takeshi Murouchi, MD, Soshi Iwasaki, MD, PhD, and Michiaki Yamakage, MD, PhD



Murouchi et al, RAPM 2016

Quadratus Lumborum Block

Analgesic Effects and Chronological Ropivacaine Concentrations After Laparoscopic Surgery

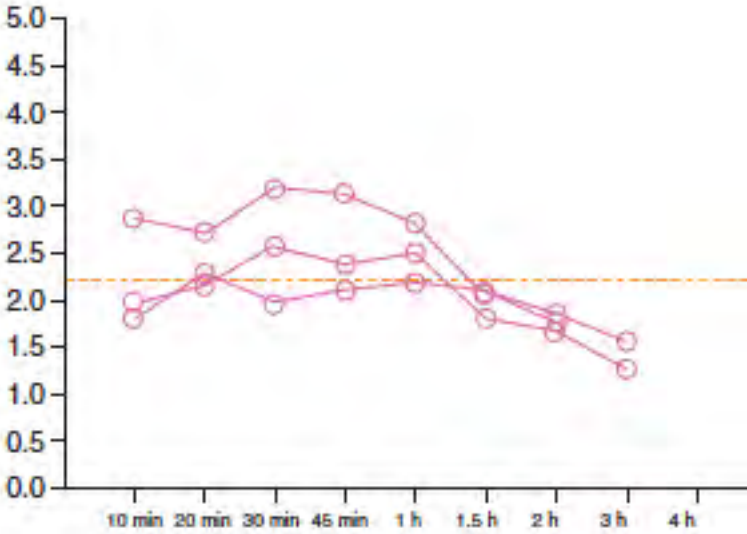
Takeshi Murouchi, MD, Soshi Iwasaki, MD, PhD, and Michiaki Yamakage, MD, PhD

Variable	QLB (n = 11)	TAPB (n = 11)	*P*
Outcome measures			
Dose of ropivacaine, mg/kg	2.8 (0.5)	3.0 (0.3)	0.33
T_{max}, min	35 (13)	35 (11)	0.93
C_{max}, μg/mL	1.0 (0.5)	1.8 (0.4)	0.0002*
Duration of analgesia, h	>24	7.0 (5.6–8.9)	0.003*

Murouchi et al, RAPM 2016

Symptomatic local anaesthetic toxicity and plasma ropivacaine concentrations after transversus abdominis plane block for Caesarean section

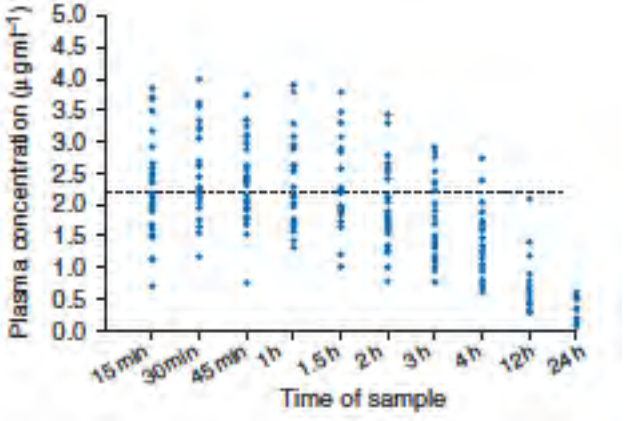
Griffiths et al, BJA 2013



Césarienne, N=30, veineux
TAP ligne axillaire moyenne
Ropivacaïne 2,5mg/kg, volume 20mlx2
3 patientes avec toxicité systémique

Plasma ropivacaine concentrations after ultrasound-guided transversus abdominis plane block

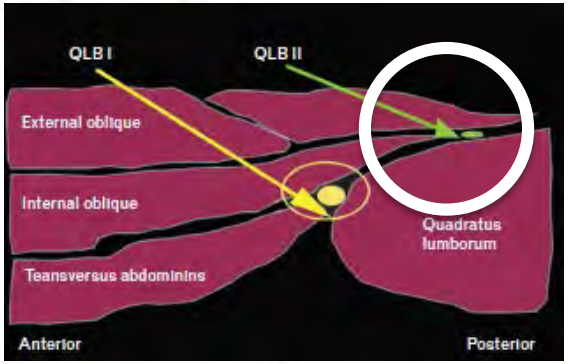
Griffiths et al, BJA 2010



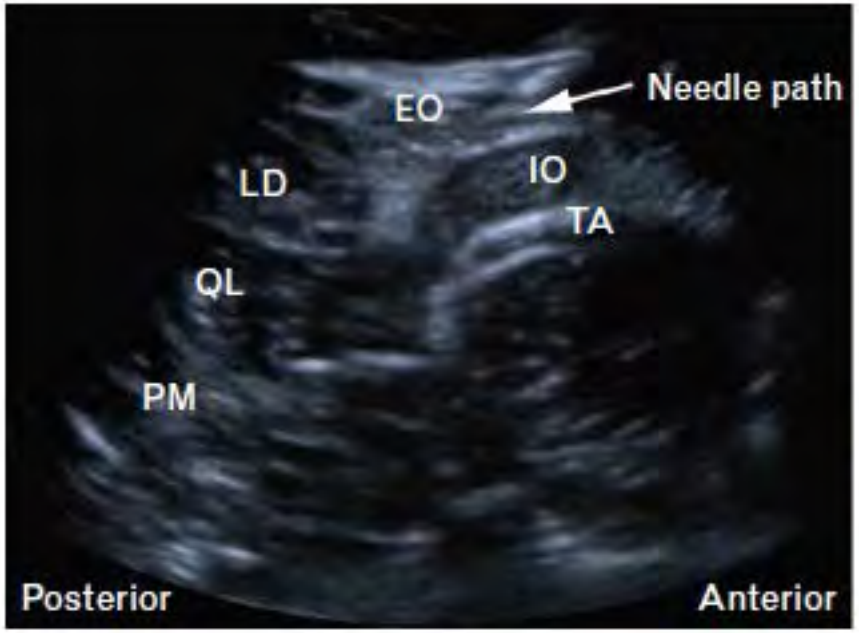
Chirurgie gynécologique, N=28, veineux
TAP ligne axillaire moyenne
Ropivacaïne 3mg/kg, volume 20mlx2
Pas de toxicité systémique clinique

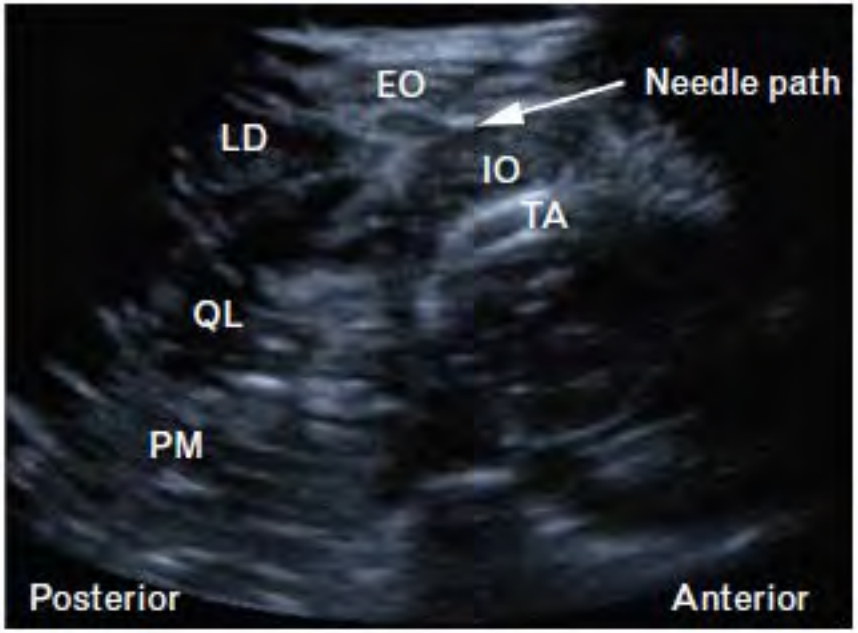
Quadratus lumborum block for postoperative pain after caesarean section

A randomised controlled trial



EPR
Césarienne rachi (bupi-fentanyl)
EPP: opiacé H24





Blanco et al, Eur J Anaesthesiol 2015

Quadratus lumborum block for postoperative pain after caesarean section

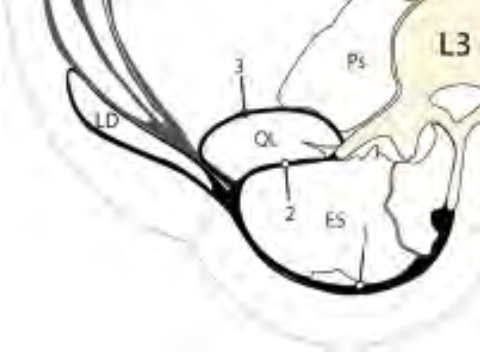
A randomised controlled trial

	Bupivacaine ($n=25$)	Saline ($n=23$)	P
Morphine use (mg)			
4 h postoperative	0.0 (0.0–4.0)	2.0 (0.0–7.0)	0.119
6 h	2.0 (0.0–6.5)	7.0 (5.0–19.0)	0.001*
12 h	8.0 (2.5–10.5)	14.0 (9.0–25.0)	0.002*
24 h	11.0 (4.0–18.0)	19.0 (11.0–36.0)	0.011
48 h	11.0 (4.5–18.0)	20.0 (13.0–48.0)	0.012
Morphine demands, *n*			
4 h postoperative	0.0 (0.0–4.0)	2.0 (0.0–0.0)	0.067
6 h	2.0 (0.0–7.0)	8.0 (6.0–24.0)	0.001*
12 h	8.0 (2.5–11.5)	17.0 (14.0–39.0)	0.0001*
24 h	11.0 (4.0–20.5)	23.0 (14.0–39.0)	0.008*
48 h	13.0 (5.0–20.5)	25.0 (15.0–53.0)	0.005*

	Bupivacaine ($n=25$)	Saline ($n=23$)	P
VAS at rest (0–10)			
4 h postoperative	0 (0–0)	3 (0–4)	0.0001
6 h	0 (0–1)	4 (2–5)	0.0001
12 h	0 (0–2)	3 (2–4)	0.0001
24 h	2 (0–3)	2 (1–3)	NS
48 h	0 (0–1)	0 (0–3)	0.004
VAS dynamic (0–10)			
4 h postoperative	0 (0–0)	3 (0–5)	0.0001
6 h	0 (0–0)	4 (2–6)	0.0001
12 h	0 (0–2)	4 (3–6)	0.0001
24 h	2 (0–3)	4 (2–5)	0.006
48 h	0 (0–1)	2 (2–4)	0.004

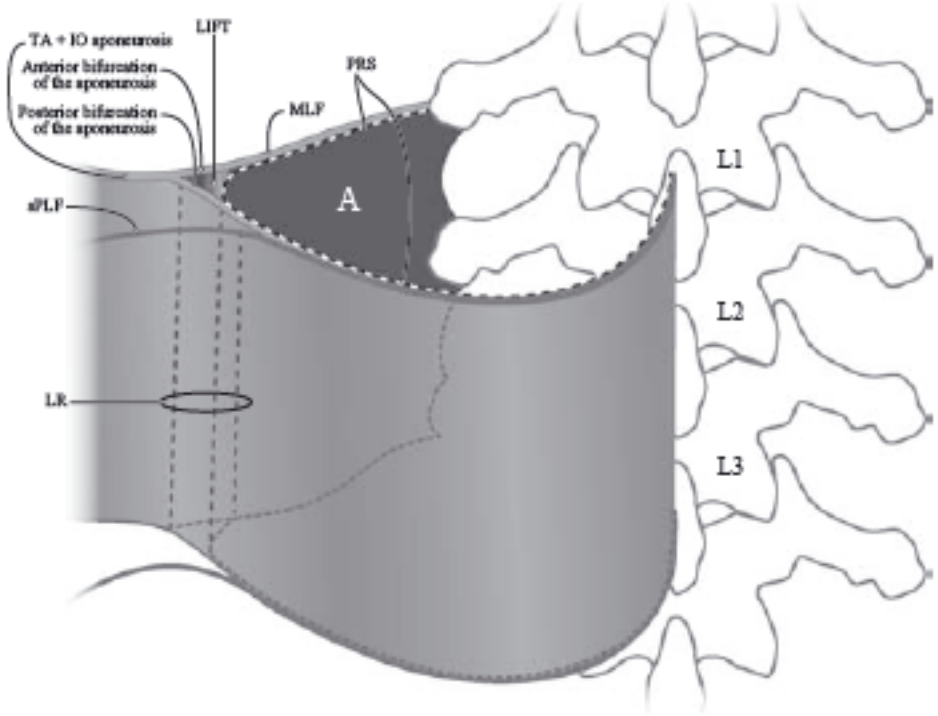
AVELINE-SFAR-IALR

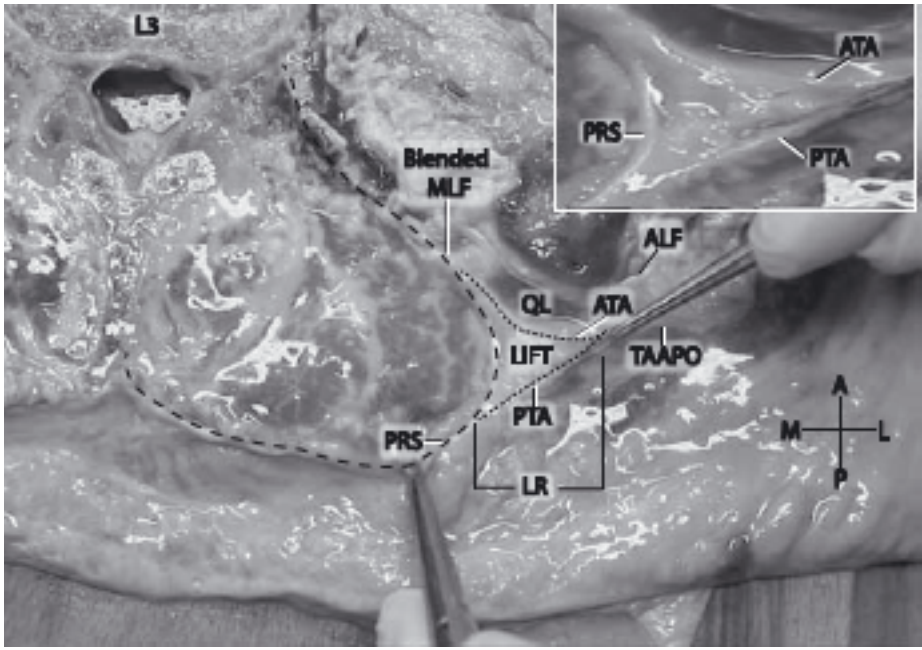
Blanco et al, Eur J Anaesthesiol 2015



Fascia thoracolombal

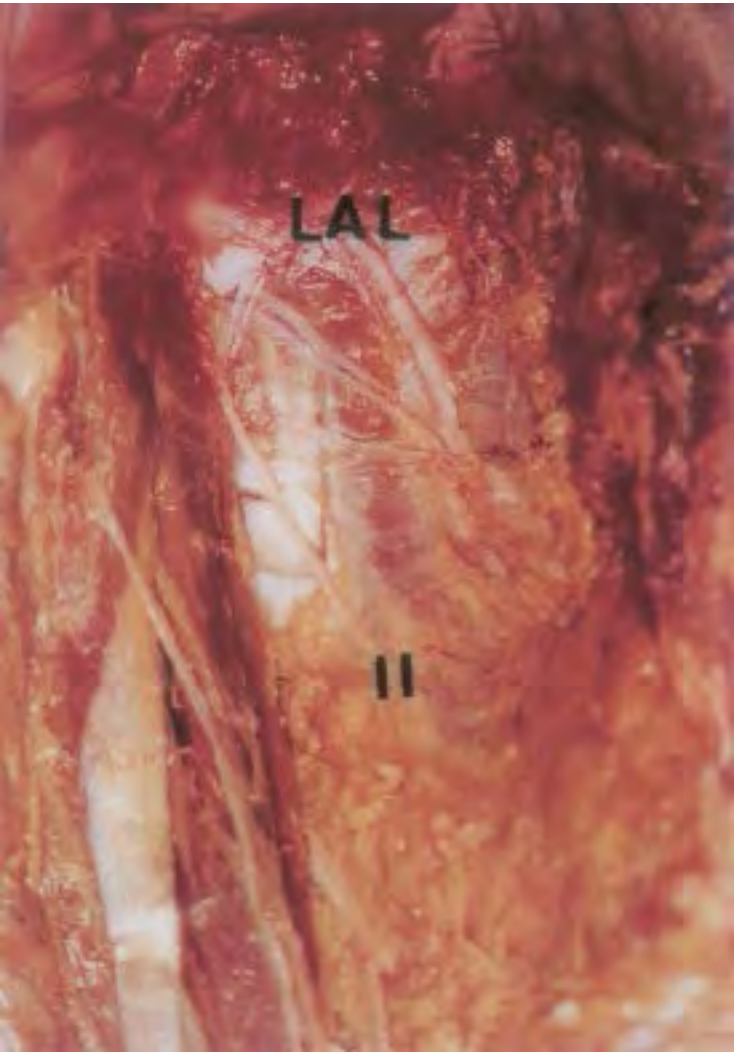
- Continuité avec fascia transversalis
- Continuité du fascia du m. QL et ligament arqué latéral
- Passage entre QL et son fascia du N subcostal , NIH et NII
- FTL: partie moyenne étendue entre T12 et crête iliaque
- Point de « rupture » face latérale du QL (raphé latéral)



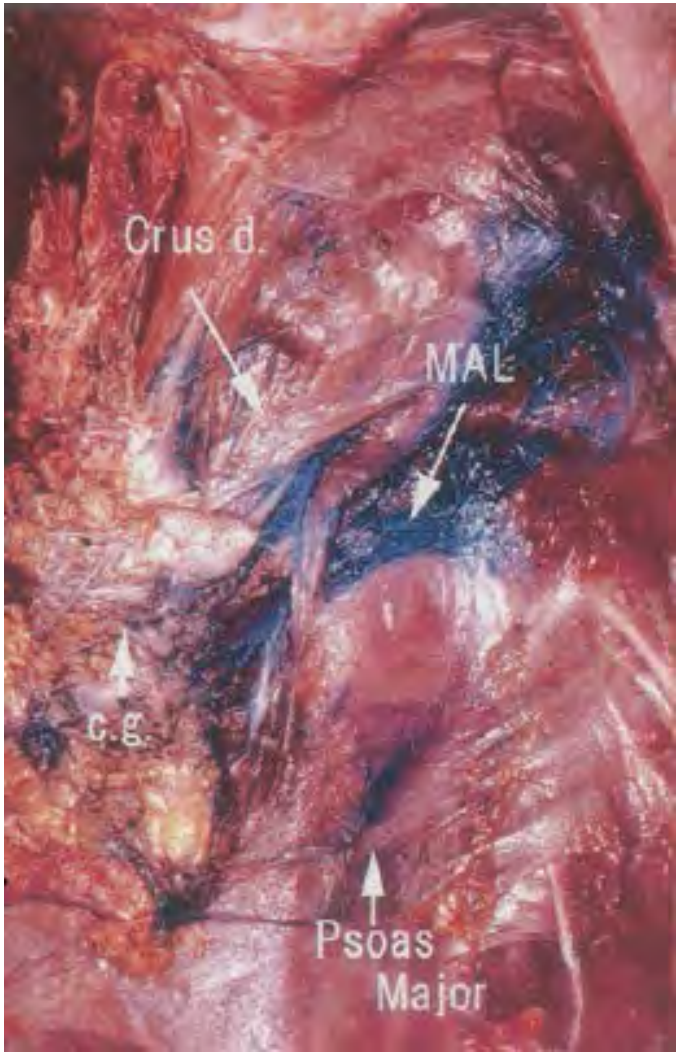


Schuenke et al, J Anat 2012

Ponction paravertébrale en T11

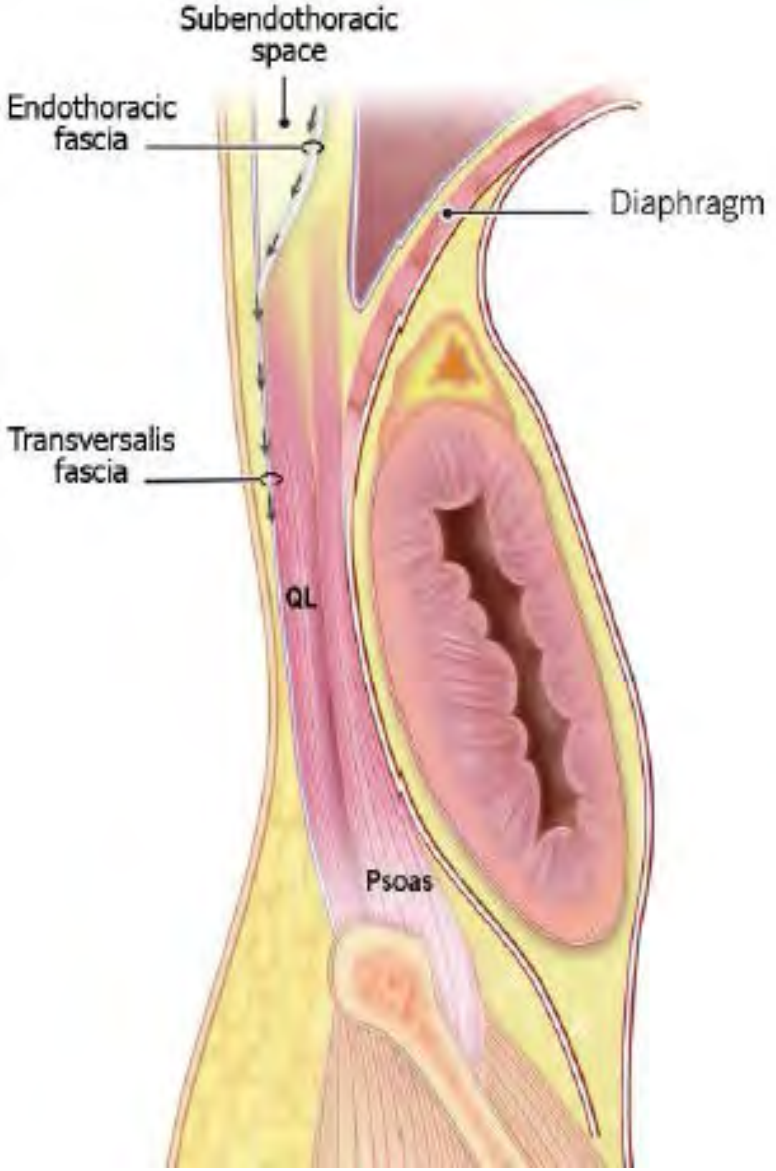


Diffusion par le ligament arqué moyen et latéral
N. Subcostal (XII), ilioinguinal,
N. Iliohypogatstrique
N. Cutané latéral de cuisse
Extension T6-L2



Saito T et al, Surg Radiol Anat 1999

Continuité des fascias endothoracique et transversalis



Adapté de Saito T et al, Surg Radiol Anat 1999

Bloc du QL

- Abord « anatomique » à définir
- Voie(s) de distribution de la solution analgésique pas encore établie(s)
- Continuité FTL, FI et paravertébrale
- Volume, dose d'AL, comparaisons directes vs ALR périmédullaire manquantes
- Extension au plexus lombal et bloc lombaire postérieur « remanié »: erreur d'interprétation